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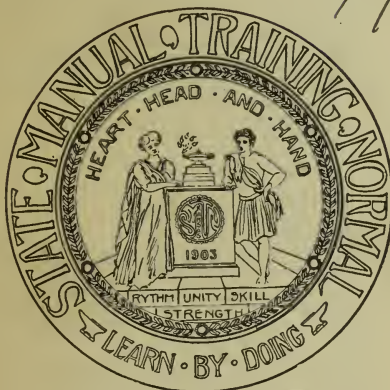
DECEMBER, 1909.

KANSAS STATE MANUAL TRAINING NORMAL SCHOOL.

UNIVERSITY OF ILLINOIS

GEOGRAPHY NUMBER.

PRESIDENT'S OFFICE.

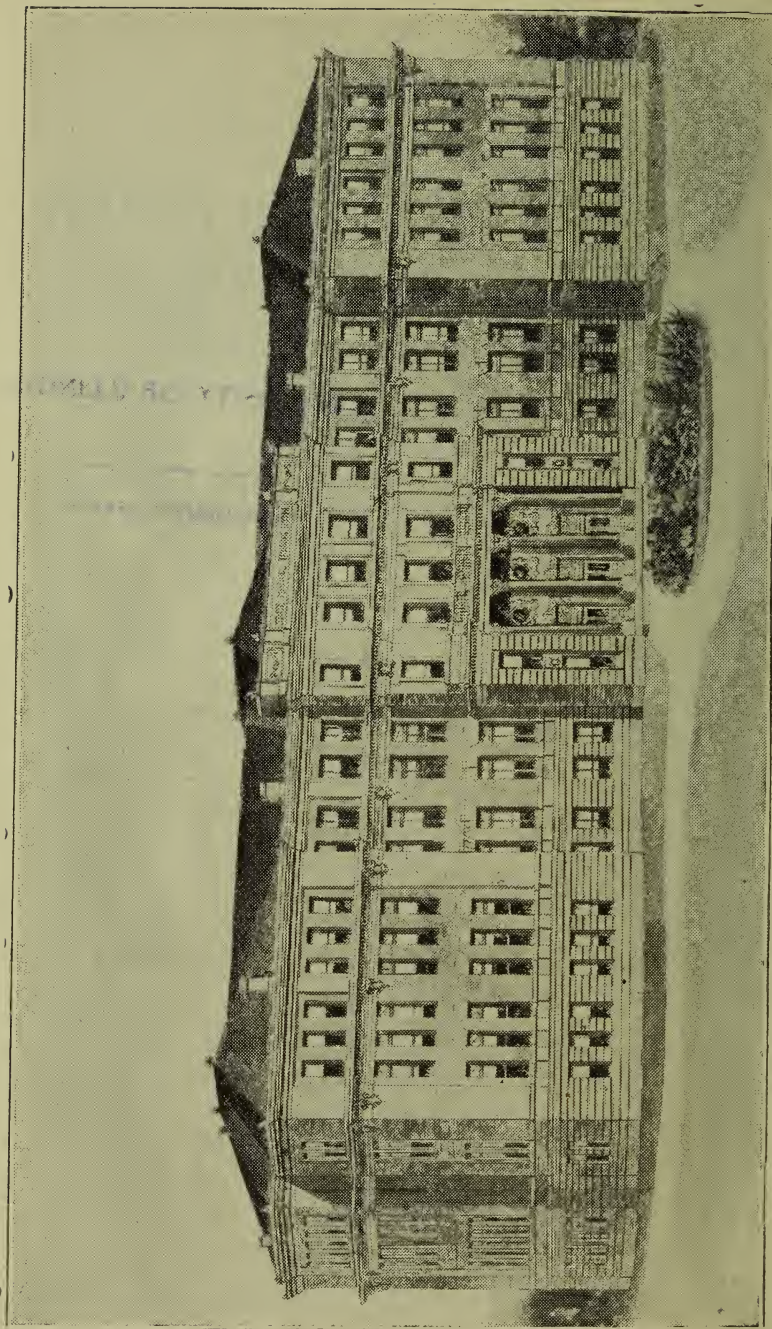


ISSUED QUARTERLY BY THE
STATE MANUAL TRAINING NORMAL SCHOOL,
PITTSBURG, KANSAS.

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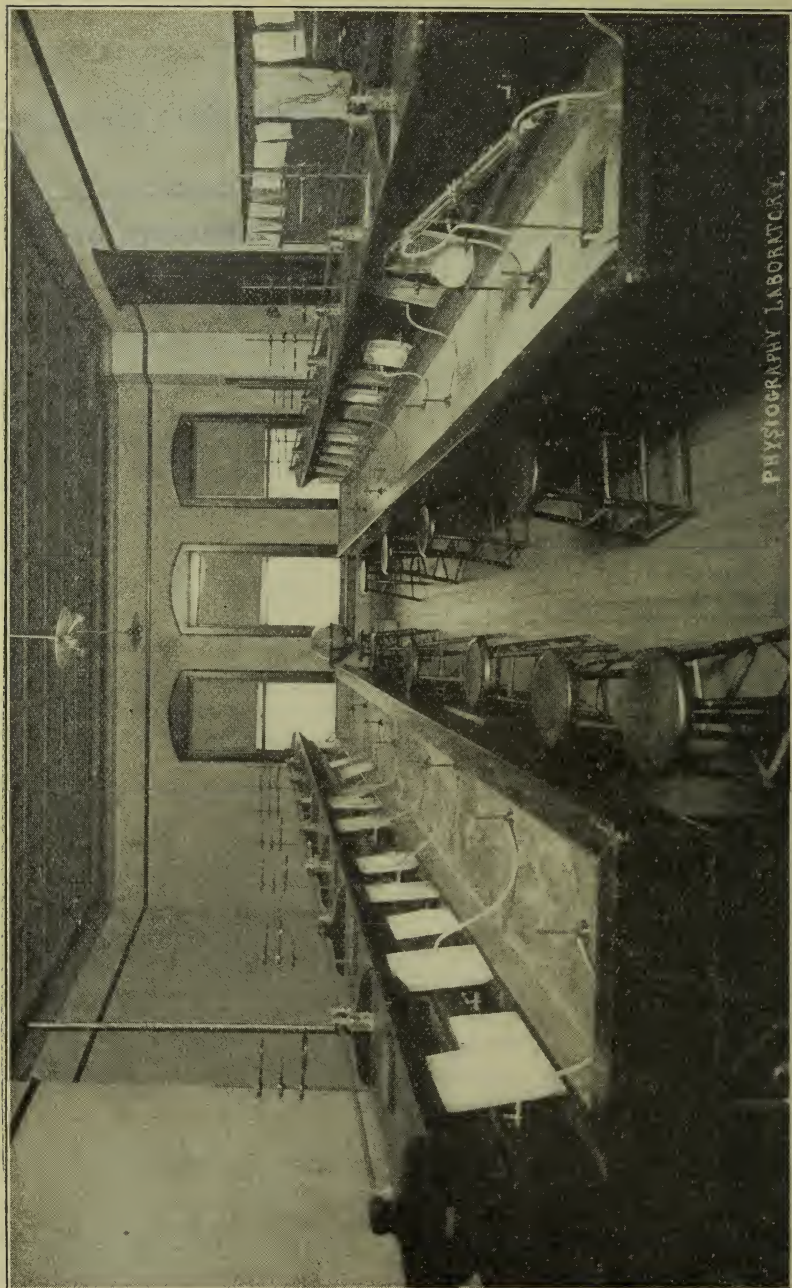
State Manual Training Normal School.

UNIVERSITY OF ILLINOIS

PRESIDENT'S OFFICE

Calendar for 1909-'10.

November 25....	Thursday.....	}	Thanksgiving Vacation.
November 26....	Friday		
December 22....	Wednesday.....	—	Contest for Fitch Prize in Essay.
December 22....	Wednesday.....	}	Contest for Lanyon Prize in Declaration.
December 23....	Thursday.....		
	1910.	}	Christmas Vacation.
January 3	Monday.....		
January 28	Friday	}	County Teachers' Examination.
January 29	Saturday.....		
January 31	Monday	—	Second Term opens.
March 4.....	Friday	—	Commemoration Day.
April 4.....	Monday	—	Spring Term opens.
June 3	Friday	}	Contest for J. Luther Taylor Prize in Oration.
June 3	Friday		
June 3	Friday	}	Contest for Lindburg Prize in Debate.
June 5	Sunday.....		
June 7	Tuesday (A. M.).....	—	Baccalaureate Address.
June 9	Tuesday (A. M.).....	—	Commencement.
June 9	Thursday.....	—	Enrollment for Summer School.
August 5.....	Friday	—	Summer School closes.



THE PHYSIOGRAPHY DEPARTMENT.

"True education concentrates upon the development of the highest motive. Upon this basis, the absolute and relative value of any branch of knowledge, the fundamental reason for its teaching, the proportion of time and effort given to it, must be determined by the influence of such knowledge upon the human being in the outworking of design into character.

"Geography is the study of the material basis, the primary condition and explanation of life and the substantial preparation for it. It gives us the key to both the degrading and elevating influence of structural and climatical environment, and also the limitations of this powerful agent. It explains and illuminates history. By it laws, tendencies, and motives are understood. Through it we learn to be merciful in regard to human weaknesses, and to appreciate all effort in the right direction. To know the world is to love the world."—*Parker*.

Geography opens the door to all the other sciences. The study of earth structure leads directly to the study of geology and mineralogy. Observation of the effects of forces in erosion, winds, running water or the energies of heat make the study of physics a necessity. Changes in matter, organic and inorganic, give the first acquaintance with chemistry; the percolation of water through the soil to the plant roots brings in the study of botany. The study of plants merges into the study of animals and man. Thus geography, the study of the basis and causation of life, unites all the natural sciences in one universal unit.

LABORATORY.

A laboratory has been fitted up especially for the scientific study of geography and physiography. It is a large, well-lighted room, situated on the fourth floor of the building, and will accommodate thirty-six students at one time.

EQUIPMENT.

GENERAL—

- Lead troughs for wet and dry sand modelling.
- Drawing boards for pen, pencil and charcoal modelling.
- Glass plates for papier-mache, salt and starch mixture, and putty modelling.
- Anemometer with electrical connections.
- Mercury and aneroid barometers.
- Surveyor's aneroid.
- Maximum and minimum thermometers.
- Weather chart.
- Rain gauge, hygrodeik, thermometers.
- Circulation and convection apparatuses.
- Daily weather maps.
- Large globe, several small globes.

Percolators and samples of soil.
Magnifying glasses.
Mortars, bell jars, hydrochloric acid.
Large collection of stone and minerals.
Glass and rubber tubing.

INDIVIDUAL—

Water, gas, Bunsen burner, ring stand.
Test tubes and test-tube stand.
Beakers, flasks, evaporating dishes.
Drawing board, bottle of acid, stool.
Many pieces of apparatus are built by the students when needed.

The following are the courses of instruction given :

D. C. PHYSIOGRAPHY, FOR THOSE WHO HAVE FINISHED THE COMMON-SCHOOL COURSE.

THE EARTH :

Relation to sun and moon.
Rivers—Source, importance, work, field study.

WEATHERING:

Sandstone, shale, limestone, granite—
Occurrence, formation, composition, structure, use.
Field and laboratory study.

SOIL :

Sandy, clayey, loam—
Origin, structure, composition, comparative fertility.
Field and laboratory study.

DEPOSITION OF MINERALS :

Laboratory study of a few of the most common ores—
Occurrence, appearance, composition, use.

CAVERNS :

Stalactites, stalagmites.
Laboratory study.

SPRINGS :

Mineral, hot, geysers, wells, artesian wells.
Laboratory study of mineral water.

GLACIERS :

Work; importance.
Laboratory study of glacial rocks and till.

PLAINS :

Marine, lake, prairie, river—
Formation and characteristic features.

MOUNTAINS AND PLATEAUS :

Formation and structure.

VOLCANOES :

Distribution, characteristics, importance.
Laboratory study of basalt and tufa.

ATMOSPHERE :

Composition, importance, weight, height, humidity.

Lecture experiments demonstrating dew, frost, clouds, fog, rain, snow.

WINDS :

Cause, importance, mechanical work, storms, weather.

Lecture experiment on circulation.

CLIMATE :

Affected by latitude, altitude, prevailing winds, mountains, water bodies.

OCEAN :

Basins, continental shelves, seas, islands.

Sea water—Composition, density, color.

Movements—Waves, tides, currents.

Life.

Highway.

Shore lines—Harbors, cliffs, rising and sinking coasts.

EARTH AND MAN :

Food, shelter, clothing.

C. C. COURSE, FOR THOSE WHO HOLD THIRD-GRADE TEACHERS' CERTIFICATES.

FIRST HALF.

LAND :

Position, shape, elevation.

Mountains, valleys, slopes.

OCEAN :

Coast, tides, gulf stream, fishing.

GRAND DIVISIONS :

Location, structure, drainage, outline, causes and effects of climatic conditions, products, location and extent of minerals, location and kind of people.

POLITICAL DIVISIONS :

Same outline as for grand divisions ; location of trade and manufacturing centers, with reasons for their location ; governments and religions.

Laboratory work on relief and outline maps.

Special geography for Kansas.

LAST HALF.

EARTH :

Original conditions, progress toward present condition, early surface, changes in surface and climate.

UPBUILDING FORCES :

Rising and sinking of the land, wrinkling and folding of the surface, fracturing and faulting of the strata, earthquakes, volcanoes, hot springs, and geysers.

TEARING-DOWN FORCES :

Physical and chemical agencies living things, talus slopes, creep of soil, landslides, avalanches, running water, waves, glaciation, wind erosion.

Field study of all the topics possible.

COMPOSITION:

Elements—Rocks, rock-forming minerals, age of rocks, economic importance, igneous and sedimentary.

Laboratory and field study of rocks.

Soil—Formation, composition, kinds.

Field study for fertility; laboratory study for solubility.

Ore—Deposits, formation, accessibility.

Laboratory study to become familiar with the more common ores.

GEOGRAPHIC CYCLE:

Aids—Erosion, field study of erosion.

Topography—New, mature, old.

Laboratory study of typical topographic maps.

Modifications—Composition and structure of rocks, position of strata, climatic conditions, vulcanism.

Interruptions—Rising, sinking, and warping of land, superimposed, rivers, climatic changes, glaciation.

UNDERGROUND WATER:

Source, water table, springs, artesian wells, underground rivers and caverns, importance.

PHYSIOGRAPHY OF THE UNITED STATES:

Plains, plateaus, mountains, valleys, canyons, rivers, basins, lakes, climate, rainfall and irrigation, forests, forest reserves.

Laboratory study of topographical maps and typical forms.

COAST LINES:

Effect of waves, rock structure, elevation and submergence of coast, formation of islands, influence of coast on islands.

OCEAN:

Basins, continental platforms, composition of water, floor of ocean, waves, tides, currents, importance of circulation, ocean life.

AIR:

Composition and properties, pressure and density, moisture and the formation of clouds.

Laboratory work on weight, pressure and density of air formation and classification of clouds; outside observation of clouds:

WINDS:

Cause; nature; general circulation, local, cyclonic; thunderstorms.

Laboratory reading of anemometer; outside observation.

POLITICAL GEOGRAPHY.**COURSE 1.**

General review of the continents, grand divisions and political divisions with reference to physiography and physiographic effects; climatic conditions and effects; economic value of animal, vegetable and mineral products; importance of glaciation and the coal age; extent of territory, strength of government, peculiar characteristics, correlation and comparison with other countries.

Relief and topographic map work, laboratory study of coal, coal shale, peat, graphite, fossiliferous limestone.

PHYSIOGRAPHY.**COURSE 2.****LITHOSPHERE :**

Relief features—Origin, continental platforms, ocean basins, plains, plateaus, mountains.

Material of land—Sedimentary, igneous and metamorphic rocks.

Laboratory study of typical rock forms. Field study of strata.

Work of atmosphere—

Mechanical—Abrasion by wind, dust and sand; gradational effects. Field study of abrasion.

Chemical—Oxidation, weathering.

Laboratory study of oxidation. Field study of weathering.

Work through influence of atmosphere—Freezing, thawing, expansion and contraction, rock breaking.

WATER :

Ground water—Source, existence, amount, movement, importance, mineral springs, artesian wells, geysers, chemical work, mechanical work.

Laboratory study of solution and deposition.

Field study of abrasion, slumping and sliding.

Running water—Sources, streams, valleys, alluvial topography, canyons, plains, and peneplains.

Field study of erosion and deposition. Laboratory study of loading and deposition. Topographical map study of typical forms.

Snow and ice—Supply and waste.

Glaciers—Surface, rate and nature of movement, moraines, cause of epochs, changes produced by glaciers, effects of glaciation on human affairs.

Laboratory study of rocks and till. Topographical map study of glacial forms.

Lakes—Distribution, changes taking place, origin, salt lakes, and economic value.

VULCANISM :

Causes, active volcanoes, products of volcanoes, number, distribution and products of volcanoes, and topographic effect.

Topographic map study of volcanic forms. Laboratory study of volcanic regions.

ADVANCED PHYSIOGRAPHY.**COURSE 3.****ORIGIN AND HISTORY OF PHYSIOGRAPHIC FEATURES :**

Plains, plateaus, and mountains —

Distribution, elevation, and changes.

Effect—Scenic, economic, climatic, and influence on plant and animal life.

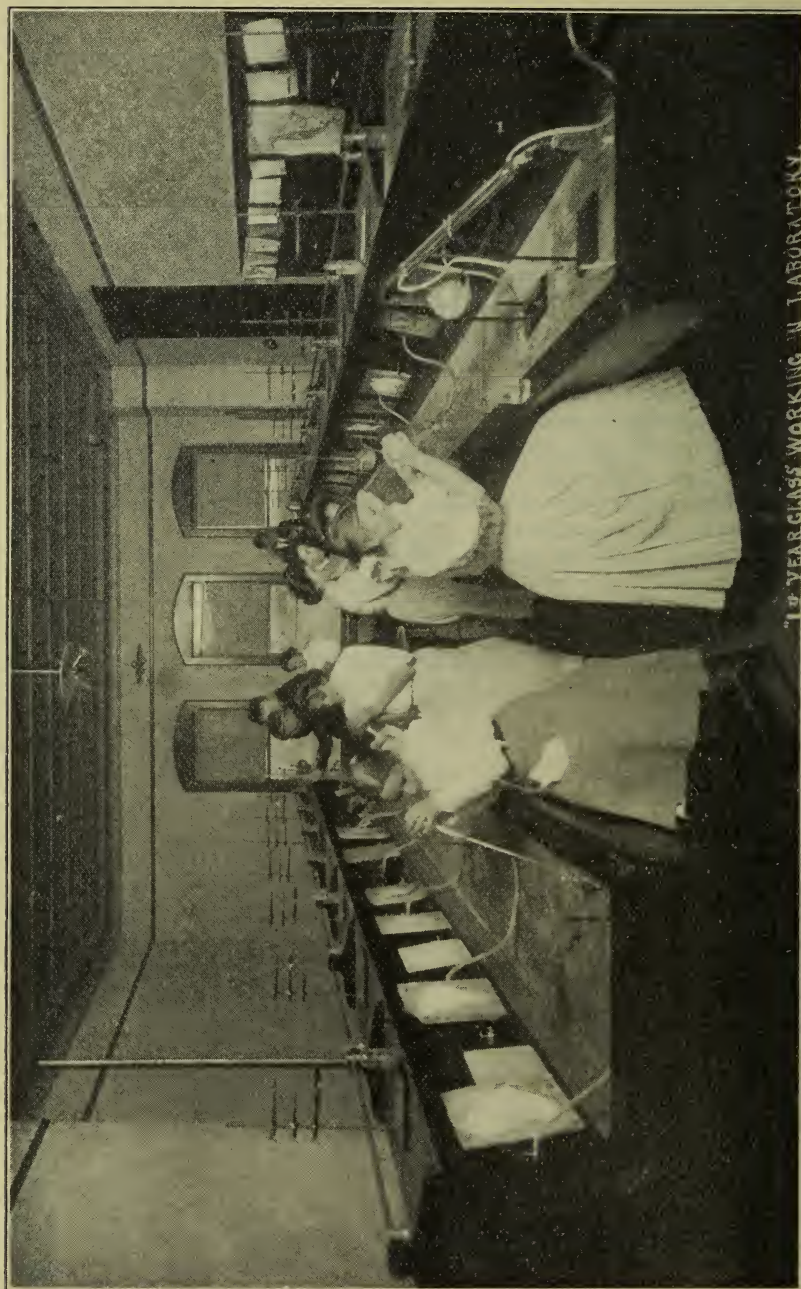
Topographical study of type forms.

CONTINENTAL OUTLINES :

Size, position, relief, agents of degradation, diastrophism, vulcanism and historical bearing.

FORMATION OF ISLANDS :

Diastrophism, vulcanism, gradation and organic processes.



19th YEAR CLASS WORKING IN LABORATORY.

TERRESTRIAL MAGNETISM :

Declination, inclination and intensity.

EARTH :

Form, size, effects of rotation, revolution and inclination of axis. Latitude, longitude and time, standard time.

ATMOSPHERE :

General conception—Relation to earth, density and altitude, height, volume and mass.

Constituents—Principal and minor constituents and their relation to each other.

Laboratory experiments, showing active principles of oxygen, nitrogen and carbon dioxide.

- Temperature—Insolation, radiation, conduction and convection, effects of altitude, changes of seasons in different latitudes, isotherms, isothermal charts and surfaces, daily and seasonal range of temperature. Laboratory study of isothermal charts.

Movements—Land and sea breezes, monsoons, mountain and valley breezes, vertical movements.

Laboratory experiments on effect of condensation and expansion on temperature.

- Moisture—Sources and functions, rate and functions of evaporation, relative and absolute humidity.

Laboratory exercises on evaporation, formation of clouds and fogs, precipitation and dust particles. Use of hygroscope in finding relative humidity, absolute humidity and dew point.

Pressure—Barometer, isobars, isobaric surfaces, high pressure, low pressure, variations of pressure.

Construction of barometer in laboratory, experiments demonstrating weight and pressure.

Circulation—Prevailing and periodic winds, effects of unequal insolation and extra tropical high-pressure belts, direction of winds, circumpolar whirl, unequal heating of land and water, gradient, velocity and direction of wind, rainfall in zones of trades and prevailing westerlies.

Laboratory study of anemometer and circulation apparatus, experiments in precipitation by expansion.

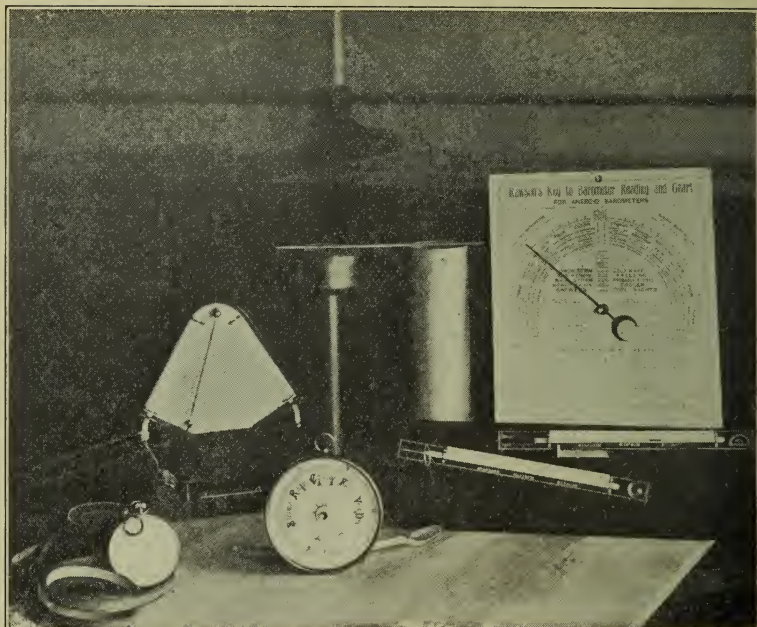
WEATHER BUREAU :

History of Weather Bureau, weather-map study, winds, clouds, temperature, cyclonic and anticyclonic movements, thunderstorms, whirlwinds, tornadoes.

Laboratory exercises in daily weather observation and prediction, including the use of weather maps, barometer, anemometer, thermometer, weather vane and hygroscope.

CLIMATE :

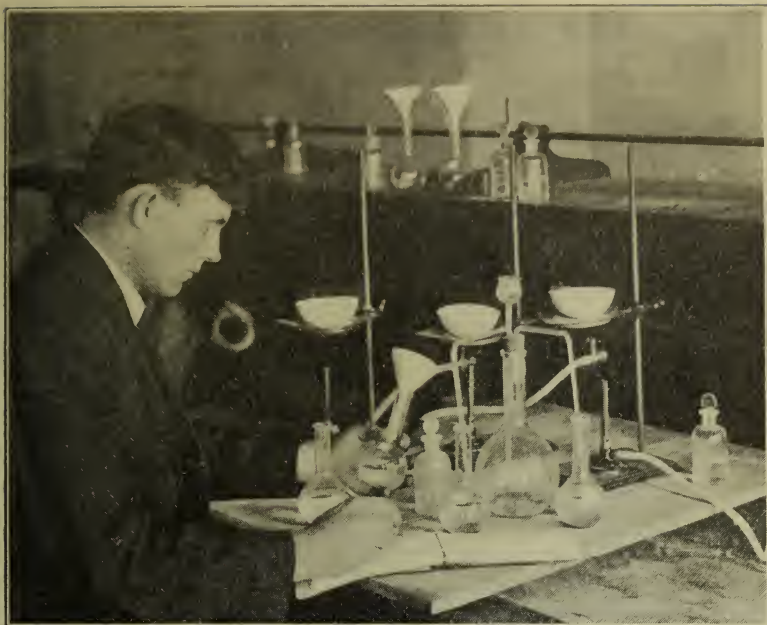
Definition, uniformity, variability, zones defined by latitude, winds and isotherms, oceanic and continental climates, mountain climates, climatic effects of forests, rainfall and agriculture, climate and life, changes of climate within historic times and within geologic times.



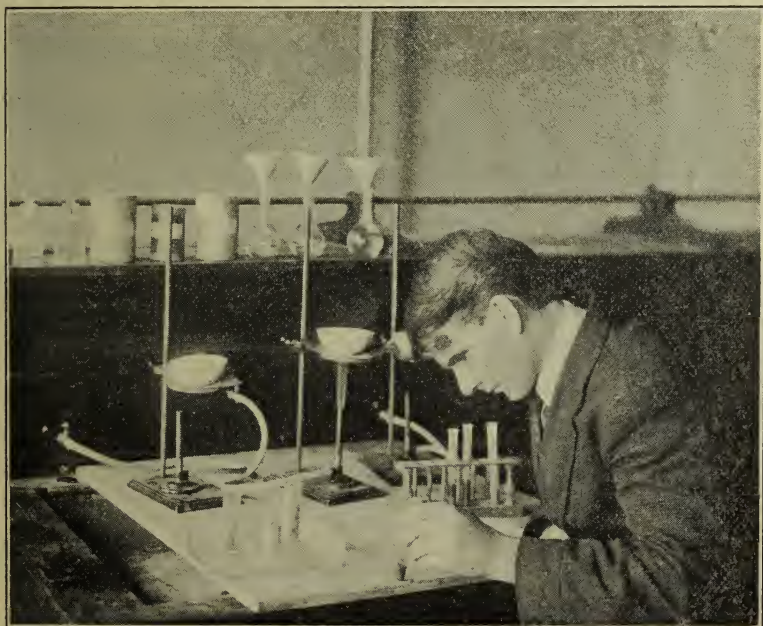
Hygrodeik, Rain Gauge, Weather Chart, Surveyor's Aneroid, Aneroid, Maximum and Minimum Thermometer.



Third-year Student Taking Hygrodeik Readings for Weather Prediction.



Third-year Student Studying Dissolution of Limestone.



First-year Student Making Soil Analysis.

OCEAN:

General conception—Sea level, physiography of sea, distribution of ocean water, depth and mass of water, topography of ocean bottom.

Sea water—Mineral matter in solution, gases in sea water, salinity and density, salinity and color.

Temperature—Surface, deep sea water, ice of sea.

Laboratory exercises on freezing and boiling point of 3 per cent salt solution.

Movements—Caused by inequality of level, wind, differential solar and lunar attraction.

Types—Waves, currents.

Tides—Cause, periodicity, solar, lunar, spring and neap tides, cotidal lines, range, bore, rate of movement, effects on shore. Laboratory exercises showing circulation by means of circulation and convection apparatuses.

Life of sea.

Materials of sea bottom.

Relation of sea to rest of the earth.

COMMERCIAL GEOGRAPHY.**COURSE 1.****GENERAL CONDITIONS.****THE PURPOSES OF COMMERCE.****OBSTACLES TO THE DEVELOPMENT OF COMMERCE :**

Personal.

Physical obstacles.

Risk of loss at the hand of public enemies or robbers.

Political restrictions.

Questions and topics.

INFLUENCE OF NATURAL CONDITIONS UPON COMMERCE :

Position.

Physiography—Influence of mountains; mountain passes; rivers and river basins; coastal and inland plains.

CLIMATE :

Causes of climatic conditions—Latitude; altitude; mountains; plains; oceans; winds; rainfall.

Effects of climate—Upon mankind; upon industries; agriculture.

SOILS :

Fertility.

Barrenness—Results to commerce and industries.

INFLUENCES OF MANKIND UPON COMMERCE :

The three great races.

Governmental influences—

Influences of governments upon trade and industry.

Study of commercial history of different governments (briefly).

Economic influences—

Capital and labor.

Money.

Population.

Cities—origin; growth.

INFLUENCES OF MANKIND UPON COMMERCE:

Beginning with the economic geography of the American colonies, and following the rise of internal commerce through the transition period to 1815, attention will be directed chiefly to the development of western commerce up to the time of the civil war, to bring out the local exchanges of each district and the general trade correlations of Northeast, Northwest, and South.

THE HIGHWAYS OF COMMERCE:

Means and methods of travel—

Ancient and modern highways.

UNITED STATES:

Boundaries—Natural and political.

Physiography—Watersheds and river systems.

GOVERNMENT:

Kind of government—

Its effect upon trade and industry.

Laws in the interest of commerce and industry.

Tariff laws; reciprocity; boundaries; subsidies.

NEW ENGLAND SECTION:

Physiography.

Principal industries.

Agriculture.

Manufactures.

OTHER SECTIONS OF THE UNITED STATES TAKEN UP IN LIKE MANNER:

Vegetable, animal and mineral products.

Study some of the important cities of the United States—

Location, history, size, railroads, steamship lines, manufactures, buildings, newspapers. Cities will be studied principally by assignment and topic, reading and research.

CORRELATION WITH HISTORY OF COMMERCE.**COURSE 2.****ANCIENT COMMERCE:**

Oriental period—

Rise of Egyptian commerce.

Development of commerce under the Assyrian and Persian empires.

The Jews.

The Phœnicians—Beginnings of sea trade; establishment of colonies; Carthage.

Greek period—

Rise of Athens to leadership.

Exports.

Athenian imports and policy.

Roman period—

The Roman state; Rome not a commercial city.

Development of commerce in the Roman East.

MEDIEVAL COMMERCE:

Feudal system; rise and character—

Difficulties and dangers of transportation.

Restrictions imposed to insure security.

MEDIEVAL COMMERCE:

Feudal system; rise and character—

The market.

Town trade.

Land trade.

Sea trade.

Development of shipping in northern Europe.

Development of shipping in Mediterranean.

Development of marine commerce.

Piracy.

Study a few principal cities of Europe, contrasting old methods with modern methods.

Contrast the history of the commercial cities of Italy and of Germany.

Rise of the Hanseatic League.

Topics.

THE AGE OF STEAM:

The English industrial revolution.

England and free trade.

WORLD COMMERCE:

Factors in the interchange of commodities—

Ocean trade routes.

Ocean cables.

International date line.

Interoceanic canals.

Draw maps showing trade routes.

Summaries of exports and imports of nations.

REFERENCE BOOKS ON GEOGRAPHY.

Adams—Commercial Geography.

Barnard—Industrial and Commercial Geography.

Bartholomew—Atlas of the World's Commerce.

Bonney—Ice Work, Present and Past.

Barton—Introduction to Geography.

Brigham—Geographical Influences in American History.

Chamberlain and Salisbury—Geology.

Dano—Geology.

Davis—Physical Geography.

De Vinno—Topography.

Dryer—Lessons in Physical Geography.

Gannett—Commercial Geography.

Gannett—Statistical Atlas of the United States.

Geikie—Teaching of Geography.

George—Little Journeys to Mexico and Central America.

Guyot—Physical Geography.

Harker—Petrology.

Herbertson—Geography.

Hulbert—Historic Highways.

Judd—Volcanoes.

King—Earthquakes.

King—Geographical Readers.

King—Soil.

Lippincott—Gazetteer of the World.
 Lyde—Commercial Geography.
 Lyde—Man and his Markets.
 Maury—Manual of Geography.
 Merrill—Rocks, Rock Weathering and Soil.
 Mill—International Geography.
 Milne—Earthquakes.
 Norton—Elements of Geology.
 Parker—How to Study Geography.
 Payne—Geographical Nature Studies.
 Rand, McNally—Indexed Atlas of the World.
 Redway—Commercial Geography.
 Rocheleau—Geography of Commerce and Industry.
 Russel—Glaciers of North America.
 Savage—British Isles.
 Shaler—Story of our Continent.
 Tilden and Clark—Geography of Commerce.
 Trotter—Geography of Commerce.
 Tyndall—Forms of Water.
 United States Geological Survey—Geologic Atlas of the United States.
 Waldo—Elementary Meteorology.
 Ward—Practical Exercises in Meteorology.
 Winans—Kansas.
 Departments of Commerce and Labor—Reports.
 Smithsonian—Reports.
 Consular Reports—Annual Series.
 Board of Railway Commissioners—Reports.

RECIPES FOR RELIEF-MAP MATERIALS.

SALT-STARCH MIXTURE.

Four parts salt; two parts water; one part laundry starch.

Heat the salt hot enough to cook the starch; mix the starch and water, and pour into the hot salt and stir thoroughly. After it becomes cool, knead until it is smooth. Wrap in a wet cloth until ready to use.

WHITING-FLOUR MIXTURE.

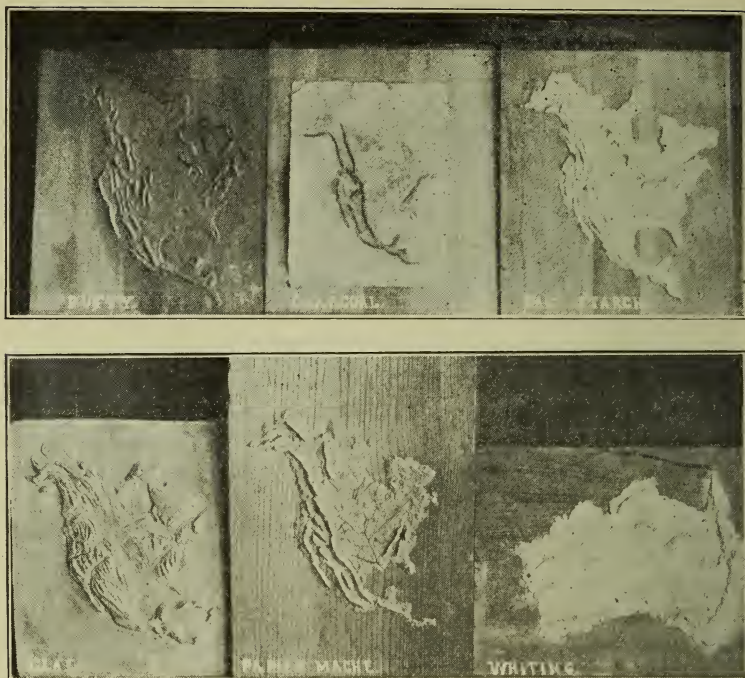
Three parts whiting; one part flour.

Mix to a stiff dough with cold water. Keep dry until ready to use.

PAPIER-MACHE.

Soak newspapers in water until thoroughly wet; then pound in a mortar or with a hammer or mallet until reduced to a pulp. Mix about one-fourth cup of laundry starch cooked in one cup of water with each quart of pulp. The mixture may be dried to keep, and soaked up when needed to use. The same pulp may be used over as often as desired.

Putty and plasticine make very nice maps, but are much more expensive than home-made mixtures. Potters' clay is the ideal substance for relief-map work, where it is obtainable, but the work requires more skill, both on the part of the teacher and the pupil, and is more tedious to work with than the other substances. Beautiful relief maps may be made by shading with a pen, pencil or charcoal, but requires a great deal of time and skill.



Relief Maps made by Geography Students.

TWENTY-ONE SIMPLE EXPERIMENTS THAT MAY BE PERFORMED IN ANY SCHOOLROOM AT SMALL COST.

1. *To Show Humidity of Air and Formation of Dew.* Place a clear glass or bright tin vessel filled with cold water in a warm room. Note results. Where does the moisture on the outside of the vessel come from? Why does it collect? Why is it a sign of rain when the water bucket "sweats"?

2. *To Find Dew Point.* Take a clear glass or bright tin vessel about one-third or one-half full of water at the temperature of the room; gradually pour cold water in until the moisture forms on the outside of the vessel. Take the temperature as soon as the moisture is visible. Put the thermometer in the water at the beginning of the experiment. Repeat the experiment until absolutely sure of results.

3. *To Show Formation of Fog through Air Expansion.* Put a little water in a large clear glass bottle. Fit the bottle with a stopper having a hole in it, through which the tube of a bicycle pump may be placed. Pump air into the bottle until the pump will not work readily. Remove the stopper. Note results. Repeat experiment to be sure of results. Why was the water put in the bottle? What was the effect of the compression on evaporation? How does this experiment explain the moist climate of the doldrums and the dry climate of the horse latitudes?

4. *To Show Functions of Dust in Precipitation.* Repeat experiment 3 after putting a lighted match in the bottle and covering quickly. Compare results of 3 and 4, and give reasons for the difference.

5. *To Show Conditions Affecting Evaporation.* Place a drop of water in the wind, or, if there is no wind, fan it. Place another where it is sheltered from the wind. Compare results as to rate of evaporation. Place two drops of water each in different temperatures. Compare results as to rate of evaporation. Place equal amounts of water in similar vessels of unequal size, and leave them exposed for several hours. Compare amounts of evaporation and give reason for the difference. Place equal amounts of water in two similar vessels of equal size; cover one and leave the other uncovered for several hours. Compare amounts of evaporation and give reasons for the difference. Name five conditions affecting evaporation.

6. *To Show Effects of Evaporation on Temperature.* Drop water, one drop at a time, on the bulb of a thermometer, allowing each drop to evaporate. Note results. Repeat the experiment, using gasoline, alcohol and ether. Compare results. Give reasons for differences.

7. *To Show Precipitation by Lowering the Temperature.* Make a saturated solution of alum and hot water in clear glass vessel. Allow solution to cool. Note the formation of crystals.

8. *To Show Effect of Color on Absorption of Heat.* Wrap the bulb of a thermometer with black cloth or paper. Wrap the bulb of a similar thermometer with white material similar to the black. Place both thermometers in the sun and note difference of readings.

9. *To Show Effect of Color on Conduction of Heat.* Paint one of two similar bottles white and the other black; fill both with hot water; take temperature a half hour after filling with the water. Note difference.

10. *To Show that Carbon Dioxide will not Support Combustion.* Pour hydrochloric acid over limestone and place a lighted match in the gas given off. Repeat experiment to be sure of results. (Strong vinegar and baking soda will generate carbon dioxide nicely.)

11. *To Show that Nitrogen will not Support Combustion.* Place a lighted candle under a glass jar. What happens? Why?

12. *To Show that Oxygen Supports Combustion.* Generate oxygen by pouring water on the amount of sodium peroxide that will lay on a dime. Put the glowing end of a match or stick in the gas given off. Repeat the experiment several times. Note results. The oxygen may be generated by heating a mixture of potassium chlorate and manganese dioxide.

13. *To Show Proportions of Oxygen and Nitrogen in the Air.* Fasten a short candle on a cork so that it will float. Place the cork in shallow water and turn a clear glass vessel with straight sides over it. Measure the column of air above the water. Light the candle and place jar over again, supporting the jar a little above the bottom of the vessel each time. After the candle ceases to burn, measure the column of air above the water. This compared with first measurement will give proportion of nitrogen; the difference compared with first measurement will give proportion of oxygen. Repeat experiment until absolutely sure results are correct.

14. *To Show Relation of Oxidation to Burning and Rusting.* Moisten some bright steel wool, iron filings, or iron shavings, and place on a cork so

it will float. Place cork in shallow water and cover with a clear glass vessel similar to the one used in experiment 12, supporting the top of the jar a little above the bottom of the vessel. Let stand for several days. Compare results with results of experiment 12. Note appearance of material on cork.

15. *To Show Expansion of Gas and Air Pressure.* Invert a perfectly dry bottle with a long neck in enough water to fill the bottle; allow the water to extend only a short distance up the neck of the bottle. Gradually heat the bottle. What causes the bubbles? Continue to heat the bottle until the bubbles stop. Hold the bottle in the same position until it cools. Give reasons for results. Hold the bottle erect and inverted. Why does the water not run out?

16. *To Show Air Pressure.* Immerse the lower end of an electric-light bulb in water, having at least two-thirds of the bulb out of the water. With a knife knock off the little glass tip on the end of the bulb. Note the result. Why does the water rush in? Suspend the bulb with the aperture down. Why does the water not run out?

17. *To Show Transmission of Heat by Convection.* Place some water in a long pan; scatter some fine pieces of paper or cork on top of the water; heat one end of the pan. Note results.

18. *To Show Circulation of Air.* Place a lamp chimney on each end of the lid to a cardboard box; mark around the chimney and fill the circle full of holes; place a lighted candle in the center of one of the circles, and place a lamp chimney over each circle. Hold a smoking substance over each lamp chimney and note results. How does this account for the trade winds and belts of calms?

19. *To Show Circulation of Air in a Room.* Hold a lighted candle at the top of a door in a warm room and note direction the flame takes. Hold the candle at the bottom of the door and note difference. How does this account for planetary winds?

20. *To Compare Permeability and Solubility of Soils.* Place samples of soil, such as clay, sand, and loam, in the smallest size flower pots used by florists; set in water. Note differences of time it takes the moisture to reach the top of the samples. Remove the pots and note differences of time it takes the samples to dry. Note conditions of soil when dry, whether loose or packed. Filter water through each sample; allow the filtrate to settle; pour off the clear water and evaporate it off or allow it to evaporate. Note differences in the residues.

21. *To Show Selection in Deposition.* Place samples of fine soil, clay, sand, and small pebbles in a clear glass fruit jar; do not fill the jar more than half full. Pour water in the jar until three-fourths full; shake well and allow it to settle. Note the selection of material in settling. How does this account for our rich alluvial valleys?

Directions for Making Alcohol Lamp. Put a hole through the stopper in an ink bottle; fit a tin tube in the hole. (The handle of a library paste brush answers admirably for this.) Draw a cotton wick through the tube. (The wick may be made by twisting cotton strings together.) Fit the stopper in the bottle and the lamp is done.

GENERAL.

Living expenses will be as reasonable here as in any school of the state. Board can be secured in private families. Rooms can be secured in private families, and expenses may be reduced by securing table board in clubs. The expenses may be further reduced by self-boardings.

The cost of an education is one of the elements that enters largely into the consideration of any individual who desires to attend school. In order to furnish our friend and prospective student a very close approximation of the exact cost of living at the State Manual Training Normal School, each student in a class of twelve was requested to furnish an exact statement of his expenses for a term of twenty weeks. The following table gives the result:

	1	2	3	4	5	6	7	8	9
Board.....	\$10 60	\$52 00	\$5 00	\$43 50	\$52 00	\$40 00	\$35 00	\$60 00	\$52 00
Room.....	27 50	20 00	20 00	20 00	20 00	20 00	20 00	25 00	20 00
Books.....	8 21	2 70	5 00	2 79	3 25	9 15	5 25	6 00	4 39
Laundry....	2 95	3 70	15 00	1 75	1 30		6 00	10 00	5 00
Incidentals.....	13 49	10 92	9 50	9 95	10 25	6 75	34 75	20 00	10 45
Totals	\$62 75	\$89 32	\$54 50	\$87 99	\$86 80	\$75 90	\$101 00	\$121 00	\$91 84

Three students of this number stated that their expenses had been reduced by self-boardings. Their total expenses for the term of twenty weeks ran from \$16.70 to \$34.

From the above table it will be seen that students may be approximately divided into three classes, viz., those who have all the money they desire to spend; those who need to be economical yet have all the necessary comforts; and those who from necessity must make their expenses as small as possible.

The city of Pittsburg furnishes excellent opportunities to any student desiring to work his way through school. Each year a number of the students take advantage of these opportunities. Many of them put into practice the lessons learned in domestic science, domestic art, and manual training. The School is always glad to render any assistance possible to students wishing to secure work.

DIRECTIONS.

Students arriving in the city should report at the office of the Normal School, which is located on South Broadway. A south bound car can be taken by students arriving over Frisco, Santa Fe, or Missouri Pacific railways. Students coming by way of Kansas City Southern should take a south bound car at Seventh and Grand, two blocks west from the station; transfer at Fourth and Broadway for Normal car going south to campus.

A list of rooms and boarding places is kept on file in the office, and assistance will be given in securing suitable homes.

You can communicate with the Normal by the Bell phone, Nos. 10 or 11.

ENTRANCE REQUIREMENTS.

1. Students who hold county diplomas, or who present other credentials indicating the completion of eighth-grade work with no evidence of additional study or maturity, will be assigned to common-school diploma course.

2. Students who hold third-grade certificates will be admitted without examination to the studies of the county certificate year. Holders of certificates above the third grade will be admitted without examination to the work of the first year of the Normal certificate courses, except that they must complete the preparatory work of the county certificate year in all subjects in which their certificates do not show satisfactory grades. The grade required for passing is eighty per cent.

3. Graduates of approved four-year high-school courses who have completed the required sixteen units of the standard Normal high-school course, or their equivalents, will be admitted to the third year of the life diploma course.

4. Students over sixteen years of age without high-school credits or other credentials of school work who are candidates for county certificates may, on sufficient evidence of ability to carry the work, be assigned to the county certificate year or to preparatory classes in the common-school branches leading up to the work of the county certificate year. The course in manuscript form and orthography, or evidence of ability to meet its conditions by preliminary tests, is required for entrance of all students in the county certificate year or above.

5. Candidates for admission not meeting the above requirements may be admitted to Normal classes by examination in the following subjects: Arithmetic, reading, political geography, United States history, grammar and penmanship. The minimum passing grade is eighty per cent. Work in other subjects of the county certificate year must be completed before work requiring them as antecedent can be taken in the Normal course, and the record in all these subjects must be made before the completion of the first two years of the Normal course.

6. High-school graduates presenting sixteen approved units or credits are admitted to the third year of the life diploma courses.

7. ENGLISH, four units; three units required.

8. MATHEMATICS, four and one-half units; two and one-half units required.

Algebra, one and one-half units.

Geometry, one and one-half units.

Arithmetic, one-half unit.

Advanced algebra, one-half unit.

Trigonometry, one-half unit.

9. FOREIGN LANGUAGES.

Latin, four units.

German, three units.

10. PHYSICAL SCIENCE, two and one-half units; one unit required.
 - Physics, one unit.
 - Chemistry, one unit.
 - Physiography, one-half unit.
11. BIOLOGICAL SCIENCE, two and one-half units; one unit required.
 - Botany, one unit.
 - Zoölogy, one unit.
 - Physiology, one-half unit.
12. HISTORY, four and one-half units; two units required, one of which shall be American history (including Kansas history).
 - Greek and Roman, one unit.
 - Medieval and modern, one unit.
 - English, one unit.
 - American (including Kansas), one unit.
 - Civics, one-half unit.
13. COMMERCIAL, four units.
 - Bookkeeping and business practice, one unit.
 - Commercial law, one-half unit.
 - Commercial geography, one-half unit.
 - Stenography, one unit.
 - Typewriting, one-half unit.
 - Business arithmetic, one-half unit.
14. ARTS, four units; one unit required.
 - Manual training, one unit.
 - Domestic science, one unit.
 - Free-hand and mechanical drawing, one unit.
 - Music, one unit.
15. PEDAGOGY, two units; both required.
 - Psychology, one-half unit.
 - Methods and management, one-half unit.
 - Reviews of common branches, one unit.

Life Diploma Course.

This course includes four years of work for those who have met the requirements of the preparatory or county certificate year, or two years for high-school graduates who meet the conditions of the standard four-year high-school course. Following are the studies of this course, arranged by terms:

THE COUNTY CERTIFICATE YEAR.

<i>1st Term.</i>	<i>2d Term.</i>	<i>3d Term.</i>	<i>4th Term.</i>
Arithmetic.	Penmanship.	Algebra.	Bookkeeping.
Grammar.	Reading.	El. sch. mgt.	Literature.
U. S. history.	Kan. history.	Civics.	Gen. history.
Pol. geog.	Phys. geog.	Physiology.	Physics.

FIRST YEAR.

FIRST TERM.	SECOND TERM.
English.	English.
Arithmetic.*	Elocution.*
<i>Elect one.</i>	<i>Elect one.</i>
Latin.	Latin.
German.	German.
Commerce.	Commerce.
	Drawing.

SECOND YEAR.

FIRST TERM.	SECOND TERM.
Algebra.	Geometry.
Physics.*	American history.*
General history.*	Psychology.
<i>Elect one.</i>	<i>Elect one.</i>
Latin.	Latin.
German.	German.
English.	Chemistry.
Zoölogy.	General history.
	History and civics.
Physiology.*	English.
Physics.*	Geology.
Music.	
Elocution.	

THIRD YEAR.

FIRST TERM.	SECOND TERM.
School administration.*	Psychology.
General methods.*	Teaching.
Mathematics *	Public Speaking.*
Geography.*	History.*
Oral English.*	Biological science.*
English.*	Physical training.*
Drawing.*	
Physiology.*	

FOURTH YEAR.

FIRST TERM.	SECOND TERM.
History of education.	Child psychology.*
Teaching.	Principles of education.*
History.*	Physical science.*
Biological science.*	English.*
Free elective.	History.*
	History of education,* or
	School administration.*
	Free elective.

Life Diploma Course with Industrial Manual Training.

FIRST YEAR.

FIRST TERM.

English.
Arithmetic.
Geography.*
Physiography.*
Joinery.
Drawing.

SECOND TERM.

English.
Elocution.*
Music.*
Botany.
Wood turning.
Drawing.

SECOND YEAR.

FIRST TERM.

Algebra.
Physics.*
General history.*
Cabinet work.
Drawing.

Elect one.

Latin.
German.
English.
Zoölogy.
Physiology.*
Physics.*
Music.
Elocution.

SECOND TERM.

Geometry.
American history.*
Psychology.*
Pattern making.
Drawing.

Elect one.

Latin
German.
English.
Geology.
Chemistry.
General history.
History and civics.

THIRD YEAR.

FIRST TERM.

School administration.*
General methods.*
Expression.*
English.*
Mathematics.*
Geography.*
Forging.
Drawing.

SECOND TERM.

Psychology.
Teaching.
History.*
Public speaking.*
Sheet-metal work.
Plumbing.
Drawing.

FOURTH YEAR.

FIRST TERM.

History of education.
Teaching.*
Trigonometry.*
Chemistry.
Machine-shop practice.
Drawing.

SECOND TERM.

Child psychology.*
Principles of education.*
History of education, or
School administration.*
English history.*
Physiology.
Machine construction.
Drawing.
Physical training.*

Subjects followed by a (*) are ten-weeks subjects.

Life Diploma Course with Domestic Art and Domestic Science.

FIRST YEAR.

FIRST TERM.

English.
Arithmetic.
Geography.*
Physiography.*
Domestic art.
Drawing.

SECOND TERM.

English.
Elocution.*
Music.*
Botany.
Domestic art.
Drawing.

SECOND YEAR.

FIRST TERM.

Algebra.
Physics.*
General history.*
Domestic art.
Drawing.

Elect one.

Latin.
German.
English.
Zoölogy.
Physiology.*
Physics.*
Music.
Elocution.

SECOND TERM.

Geometry.
American history.
Psychology *
Domestic art for the grades.
Advanced dressmaking.

Elect one.

Latin.
German.
English.
Geology.
Chemistry.
General history.
History and civics.

THIRD YEAR.

FIRST TERM.

School administration.*
General methods.*
Expression.*
English.*
Chemistry.
Domestic science.

SECOND TERM.

Psychology.
Teaching.
Chemistry of foods.
Domestic science.

FOURTH YEAR.

FIRST TERM.

History of education.
Teaching.*
Physiology.
Domestic science.
Elective.*

SECOND TERM.

Child psychology.*
Principles of education.*
History of education, or
School administration.*
English history.
Domestic science.
Physical training.*

Subjects followed by a (*) are ten-weeks subjects.

Life Diploma Course with Art Manual Training.

FIRST YEAR.

FIRST TERM.

English.
Arithmetic.
Geography.*
Physiography.*
Clay modeling.
Sloyd.

Elect one.

German.
Commerce.

SECOND TERM.

English.
Elocution.*
Music.*
Botany.
Wood carving.
Clay modeling.

SECOND YEAR.

FIRST TERM.

Algebra.
Physics.*
General history.*
Pottery.
Design.

Elect one.

Latin.
German.
English.
Zoölogy.
Physiology.*
Physics.*
Music.
Elocution.

SECOND TERM.

Geometry.
American history.*
Psychology.*
Free-hand drawing.
Wood carving.

Elect one.

Latin.
German.
English.
Geology.
Chemistry.
General history.
History and civics.

THIRD YEAR.

FIRST TERM.

School administration.*
General methods.*
Expression.*
English.*
Mathematics.*
Geography.*
Clay modeling.
Joinery.

SECOND TERM.

Psychology.
Teaching.
History.
Free-hand drawing.
Joinery.

FOURTH YEAR.

FIRST TERM.

History of education.
Teaching.*
Elective.*
Physiology.
Wood carving.
Clay modeling.

SECOND TERM.

Child psychology.*
Principles of education.*
History of education, or
School administration.*
English history.*
Wood carving.
Clay modeling.
Physical training.*

Subjects followed by a (*) are ten-weeks subjects.

County School Diploma Course.

FIRST TERM.

Arithmetic.
American literature.
Physical geography.

Elect one.

Algebra.
Kansas history.
Manual training.
Drawing.

SECOND TERM.

Algebra.
Grammar.
United States history.

Elect one.

Penmanship.
Kansas history.
Manual training.
Drawing.

Diplomas and Certificates.

COUNTY EXAMINATIONS.

Regularly enrolled students of the State Manual Training Normal School may, upon the payment of the usual examination fee of one dollar, present themselves for examination for county certificates, to be conducted under the supervision of the officers of the State Manual Training Normal School, at any time when such an examination is given at any point in the state. The papers in such examination will be sent to any county designated by the applicant, there to be examined by the county board of examiners, who will issue certificates to the successful applicants under the same conditions as if the examination had been conducted under their supervision.

ONE-YEAR CERTIFICATE.

A one-year state certificate is granted to such students of the State Manual Training Normal School as apply for it, who have been at least twenty weeks in attendance and have completed successfully the first two years of the life diploma course, substituting school administration, methods, teaching (ten weeks each), for thirty weeks of elective work in the second year.

High-school graduates who are candidates for the one-year certificate must have attended the State Manual Training Normal School twenty weeks and have completed eighty weeks of work after meeting the conditions of the standard Normal high-school course. The eighty weeks must include general methods and ten weeks of teaching and six other courses from the required courses of the third and fourth years, not more than two of the six being taken from any one group. This certificate is not renewable.

THREE-YEAR CERTIFICATE.

On completion of three years of work of the life diploma course, including all the required work of the first two years, and from the third and fourth years ten weeks each of school administration and methods, twenty weeks of teaching and twenty weeks of psychology, a diploma will be given which is by law a three-year state certificate.

High-school graduates who are candidates for the three-year diploma must have attended the State Manual Training Normal School twenty weeks.

DEPARTMENT OF MUSIC.

It is the purpose of this department to offer instruction in the most practical fields of music work, with a view of training, not only performers of merit, but first-class teachers of music, so much needed in many communities. The aim of all instruction will be to lead the pupil to discover his powers, and to realize their fullest development by natural processes.

A special feature of the music work in this school is, that all work is carefully outlined into graded courses, so that the pupil may know at all times just what position he occupies in music study, and thus, by systematic work, be enabled to accomplish much more in a given time than by the "haphazard" way of teaching sometimes employed by private teachers.

The various musical organizations, such as glee clubs, chorus classes, orchestra, bands, and vocal and piano ensemble classes, offer an opportunity for practice and create a musical atmosphere which cannot be overestimated in value to the music student.

Outline of Course.

The work in *Voice Culture and Piano* is divided into courses as follows :

PREPARATORY COURSE.

TEACHERS' COURSE - Normal Class; Certificate Class.

CLASSICAL COURSE.

A definite outline of the studies and methods used in each of the above courses will be mailed upon application.

Public School Music.

There is a constant demand for *thoroughly qualified* supervisors of music. The course offered in this special department is intended not only to thoroughly qualify the supervisor, but also to acquaint him with the various school music systems now in use, and to give practice in teaching same in the "Model School" of the Normal. The course requires one to two years, depending on the ability of the student.

WORK COVERED.

Theory of Music; Sight Singing and Ear Training; Analysis of Material; Methods of Teaching; Harmony and Elementary Counterpoint; Musical History and Biography; Study of the Child Voice; Chorus Conducting; Practice Teaching; Voice Culture and Piano (sufficient to meet the needs of the school music supervisor).

Detailed outline of work covered in the supervisors' training course will be sent on application.

Organization and Classes Free to Students.

Male Glee Club (rehearsals twice weekly).

The "Polymina" Club—Girls' Glee Club (rehearsals twice weekly).

Orchestra (rehearsals twice weekly).

Band (rehearsals twice weekly).

Theory and Sight Reading, Class A } (recitations daily).
Theory and Sight Reading, Class B }

Rates of Tuition.

VOICE, PIANO, OR SUPERVISORS' COURSE.

(Rates for lessons in band or orchestral instruments, or assistant's lesson rates, will be given upon application.)

	For term of nine weeks.
Two private lessons per week, of the director.....	\$18 00
One private lesson per week, of the director.....	11 50
Single private lessons, where tuition is not paid by the term in advance, per lesson.....	1 50
Piano rental, where same is needed for practice, one hour per day, per term	1 80

HARMONY, COUNTERPOINT, CANON, FUGUE, MUSICAL HISTORY.

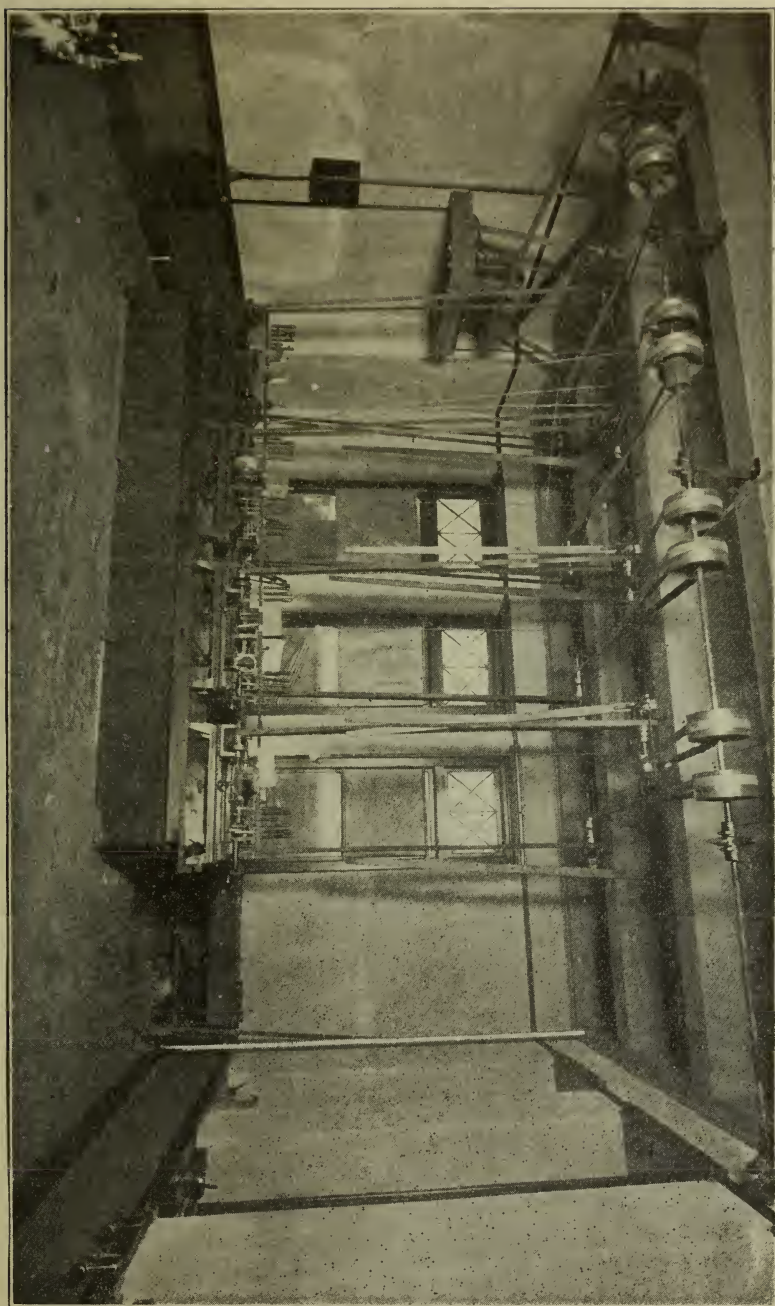
Two one-hour lessons per week, class of 8 or more, per term.....	\$5 00
Two one-hour lessons per week, class of 4 or more, per term.....	10 00

Regulation.

The usual school registration fee of one dollar per term must be paid by all students desiring the advantage of the low term rates as above given.

If the minimum term rate is desired, tuition must be *paid strictly in advance*.

Lost lessons will not be made up except in case of extended illness. In emergency cases it is possible to arrange beforehand for a temporary change of the lesson period, at the convenience of the instructor, but in such cases the lesson *must* be taken during the same week in which it is lost.



Part of Wood-working Room. Machinery Erected by Students.

MANUAL TRAINING.

Both lectures and practical work are given in manual training. All exercises are executed in full, or in part, as needed to bring out all new and advanced processes in making the exercises. All exercises are made from working drawings, and all pupils are required to make working drawings of every exercise made—not necessarily in class, but as a part of the drawing course.

The exercises consist of practice pieces of work in various forms, and are so arranged that each new exercise brings into use either a new tool or a new method of using a tool, and so graded that the development is gradual.

The exercises may take the form of a joint, showing some method of construction, or a series of practice forms to develop skill, or an article of use. The central idea is mental growth and activity in acquiring manual skill in the use of the various tools.

With the acquisition of skill comes the necessity of utilizing it in the construction of the useful and beautiful. When this object has been attained—the combination of the useful and then the addition of the decorative in beautifying—it brings forth the finished article in its highest perfection.

This idea prevails throughout all manual departments. The development



Cabinet Work.



CATHARTIC

of the pupil is complete. Students clearly recognize what line of work they are best fitted for.

In this department the instruction is such as to equip thoroughly our students for teaching any branch of manual training in the graded or high schools of Kansas. Notes and suggestions are given that will be of value to teachers organizing and equipping a manual-training department.

To equip teachers to give them the greatest range of work, to add to their school work the necessary information which a teacher requires, and which is generally omitted in the ordinary school, is our particular work. We aim to give each student practical experience. Each student will take charge of classes, grade work, give demonstrations, and perform all the duties of the regular teacher in charge.

The various departments of manual training are arranged to meet the requirements of all grades from the kindergarten to and including the high school.



Patterns of a Wood-turning Lathe.

INDUSTRIAL TRAINING.

That the manual work is only the forerunner of industrial work is clearly recognized. To abandon a line of work at a period when it is just reaching the practical and useful stage is in a large measure to lose the practical benefits of the previous training.

Industrial training is the application of the acquired knowledge from the manual-training course and other sources.

To give the pupil the greatest opportunity of realizing on his latent abilities, to enlarge his scope of usefulness, and to make him master of himself, it is necessary to broaden his course of training and direct it in such a way that his abilities can be made marketable.

The pupil is usually trained and educated in a general way, and thrown on the world to discover his own field of usefulness, while with the same amount of effort he could be trained to choose easily his life work.

It is a well-known fact that there are pupils who are unable to pursue the more advanced theoretical studies and yet possess a practical and constructive faculty. It is evident that these pupils are entitled to consideration, and that their peculiar faculties should be developed, and that they should be given every opportunity to expand and become capable of directing their energies along lines that will fit them for useful vocations.

To meet this demand, our course of work has had several additions which will appeal to the practical as well as the theoretical, and will harmonize these elements. The courses in cabinet making, pattern making, forge work and machine-shop practice will be enlarged, and it is proposed to make these courses, after the preliminary training, of greater scope and usefulness. Our modern equipment in these departments allows us to undertake a course of constructive work that will involve the use of all the modern machinery usually employed in the shops of these trades.

We make no pretension to teach trades, but the fundamental principles underlying the trades. An opportunity is given to familiarize one's self thoroughly with methods and the machines employed in the trades and to give one the advanced standing that systematized instruction along industrial lines promotes. This is accomplished in our course of industrial training.

We would call your attention to the outlines of work under the various departments for course of definite work.

PATTERN MAKING AND MOLDING.

These two departments work together. A knowledge of making of the mold and drawing it from the sand is necessary to the intelligent construction of the pattern. A short course in this work brings out the method of building up stock, allowing for shrinkage, planning so the pattern will draw, and, finally, making the mold and casting.

The patterns are usually made with a view of having the castings used in the machine shop in the construction of some article of use, or some working machine.

FORGING.

The course in forging is designed to give training in the working of iron and steel. In all other manual departments up to the forging, the material used does not change its condition by letting it rest, and the pupil may take his time to decide how to treat the material. Not so with the red-hot iron; it must be treated instantly, or the change of temperature affects the iron to be worked. Rapid work, quick thinking and a sure blow are demanded to get the desired results.

The pupil is taught how to care for and to manage the fire, to recognize the grades of heat necessary for the working of the different materials. He has exercises bringing in the operations of drawing, bending, punching, upsetting, riveting, welding and tempering.

The exercises consist of various pieces, bringing all the practical steps, and leading up to a finished set of tempered tools to be used in the turning of iron in the machine shop. Some of the other articles made are hooks and staples, stirrups, chains, tongs, hot and cold chisels, center punches, hammers, etc.

SHEET-METAL WORK.

The course in sheet-metal work takes in the drafting of patterns, marking out work with pattern, cutting the material, forming it into shape, and joining the parts, and the finishing of the seams and joints by the use of solder or spelter.

The study of the manufacture of tin, sheet iron, galvanized iron, sheet brass, and sheet copper, and the proper uses of these materials, will be taken up.

Practice will be given in soldering and brazing. The proper care of the soldering coppers, forging, dressing and tinning same ready for use.

The making and using of fluxes and the making of solder.

Our equipment for the work will be complete.

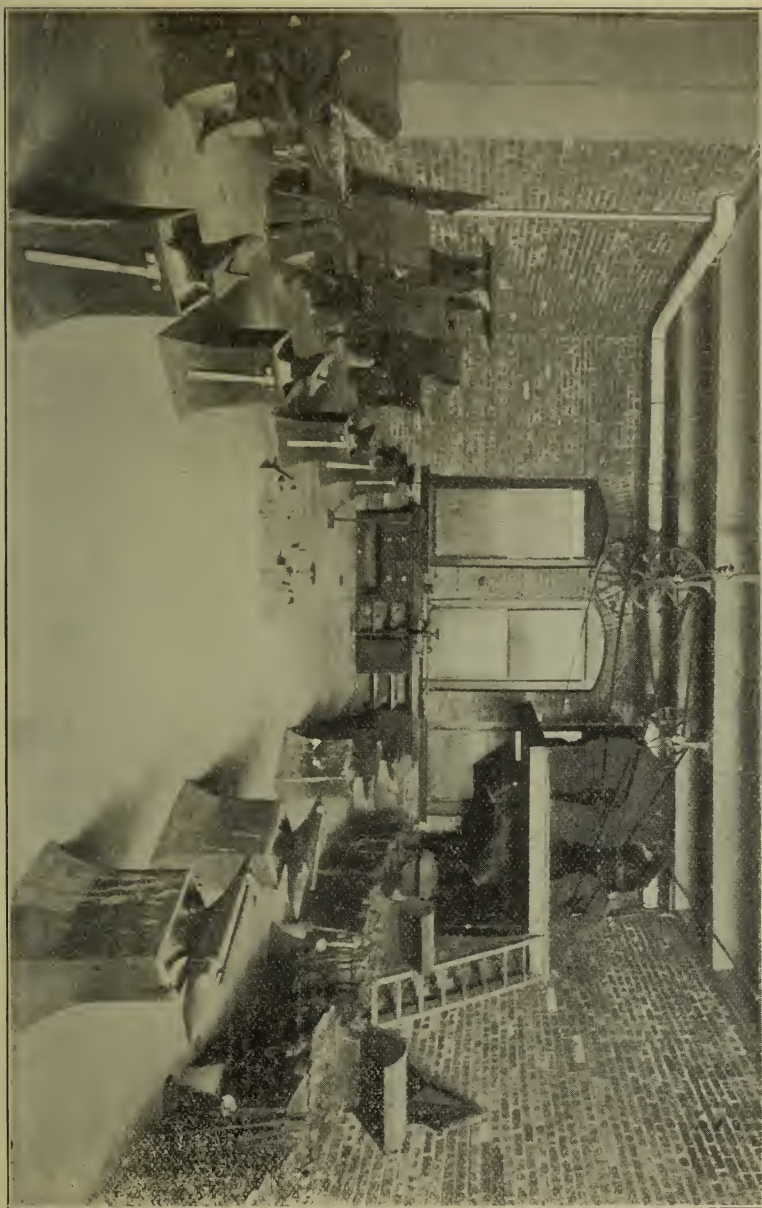
PLUMBING AND STEAM FITTING.

A course in these two branches will be given with a view of giving practice in the essentials of these branches of work—the cutting of threads and fitting of pipes and connections.

A study of the system of plumbing houses and the systems of heating houses will be followed. Plans of houses will be studied and materials estimated, as well as the cost of installing same.

CABINET MAKING AND MILL CONSTRUCTION.

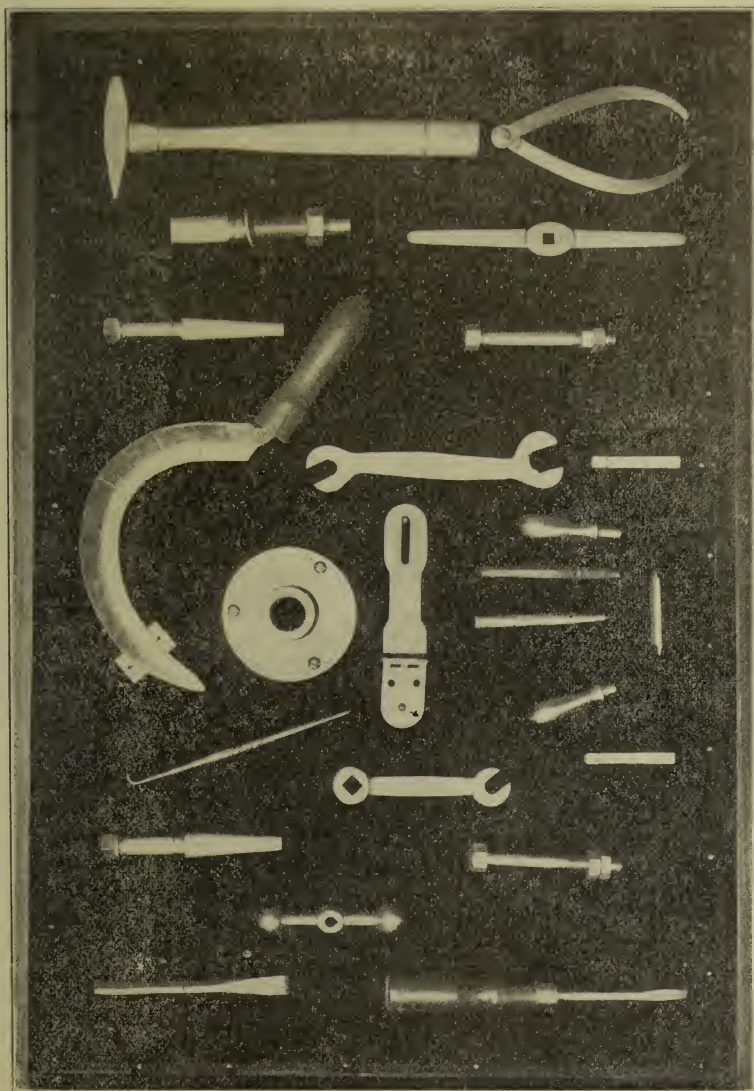
This branch of work is entirely practical. The methods and much of the drill in the use of tools is given in the course in woodwork, and now this knowledge is applied in the construction of cabinet work. Various pieces of furniture are made. Methods of paneling, the making of doors and drawers, the exact fitting, and the final finishing of same give practice with the hand tools and also with the machinery usually employed for this purpose. Under this line of work, where the pupil so elects, a course in mill construction may follow, being a practical course in construction.



Forge Room.



Forge Work.



MACHINE-SHOP WORK.

This branch of the work is of the highest order. The study of the screw-cutting lathe and its uses, the adjustment of the tools, and the regulation of speeds, requires the most careful attention.

The course of work will embrace all lines employed in the machine shop, under which practice in the following will be given: Filing; chipping; iron turning in plain and taper work, chucking and mandrel work, and the cutting of threads of all kinds; the use of the shaper and planer; work on the milling machine and drill press, and the grinding of tools and cutters, as well as the use of the universal grinder in grinding internal and external surfaces.

The machine-shop work extends over the whole of one year, and when the pupil elects, the second year in this department will take up all advanced machine construction.

Art Manual Training Course.

FIRST YEAR.

FIRST TERM.

Sloyd.
 Clay modeling.
 Conventional and animal forms
 from plaster casts.
 Models for kindergarten and va-
 rious school grades.

SECOND TERM.

Design.
 Especially as applied to furniture.
 Clay modeling.
 Study from plaster casts, includ-
 ing details of the human figure.
 Modeling of the human head.

SECOND YEAR.

FIRST TERM.

Free-hand drawing.
 Charcoal, from casts.
 Wood carving.
 Units of ornament and simple
 designs.
 Care of tools.

SECOND TERM.

Pottery.
 Wheel-thrown.
 Plaster molds.
 Firing and glazing.
 Joinery.

THIRD YEAR.

FIRST TERM.

Joinery.
 Clay modeling.
 Relief modeling as used in design.
 Lettering.

SECOND TERM.

Joinery.
 Free-hand drawing.
 From casts and from life.

FOURTH YEAR.

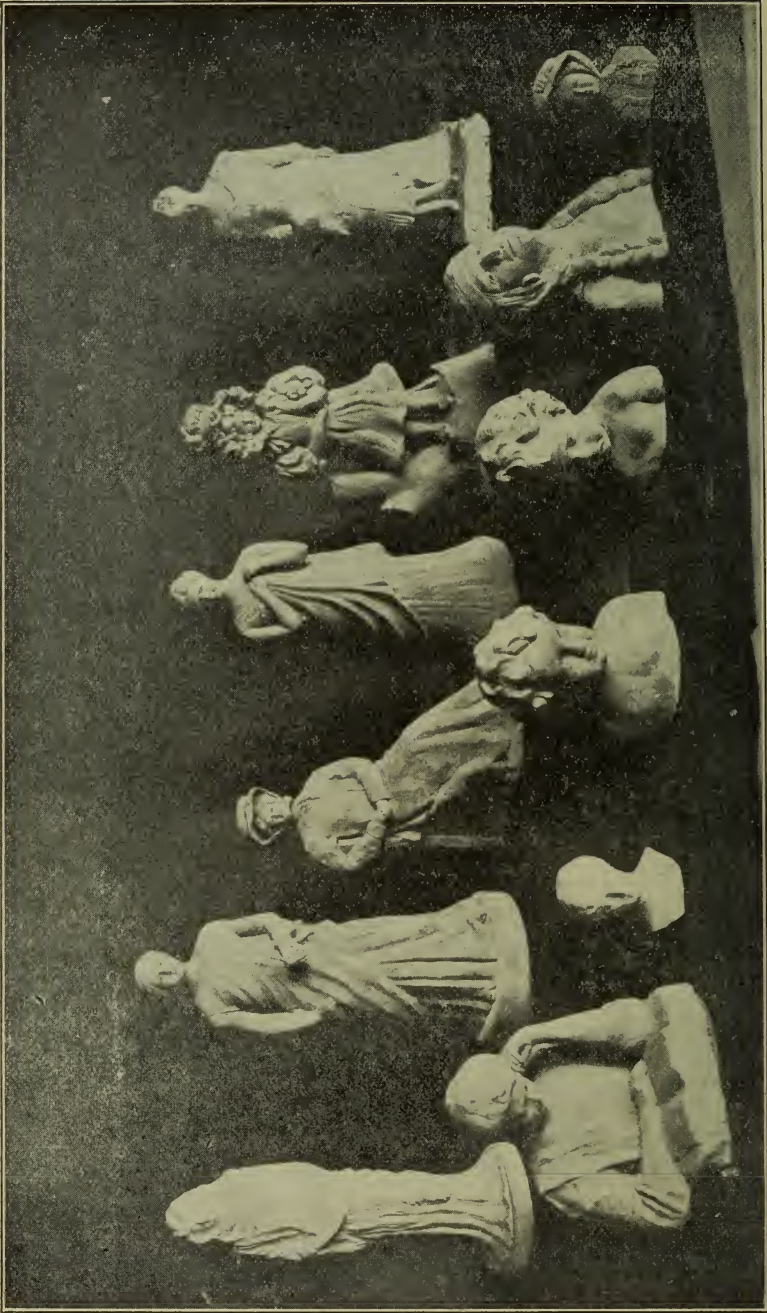
FIRST TERM.

Wood carving.
 Designs based on units of increas-
 ing difficulty and of various
 styles. Study of fitness of de-
 sign for various purposes and
 positions.
 Clay modeling.
 From life.

SECOND TERM.

Wood carving.
 Clay modeling.
 From life.
 Casting.

This course is intended to equip teachers for those schools that wish to introduce manual training with the art side rather emphasized. By giving training in clay modeling, wood carving, woodworking and drawing a well-rounded course is maintained, supplying this need. The subjects are so arranged that each enforces the others. Modeling in clay is one of the best means of studying form, and it is well to take it up previous to drawing and carving; while work in joinery is invaluable in carving, and at the same time it supplies the training that will equip one to utilize the products of carving. The course aims at the training of teachers for grade- and high-school work, while in modeling work is given suitable for kindergarten and primary grades.



Clay Modeling from Life and Original Work.



Student Modeling in Clay.

The first year in modeling is spent in the copying of plaster casts, animal forms, classic ornament, details of the human figure and the head. Simple hand-built pottery is made. Casts are made from work in relief, and later from work in the round.

In the fourth term's work special attention is given to pottery, including the making of wheel-thrown pottery, plaster molds, firing and glazing.

The work of the fifth term is relief modeling as used especially in design, such as letterheads, cover designs and artistic advertising of all kinds. The aim of this, as of the whole course, is to turn the student's artistic knowledge of modeling to practical account, to fill the demand everywhere for the artistic craftsman.

The last year in clay is spent in modeling from life. A year of free-hand drawing from the cast and from life serves to enforce the modeling and is enforced by it.

Likewise, in the study of design, woodwork and carving, each contributes to making the student an able worker in wood. The work in design is such as will apply to furniture making. Wood carving is an ancient art revived, and is receiving its full share of the present interest in artistic handicraft. The work begins with the carving of simple units of design, and as these are studied the student is learning the care and handling of tools and mastering some of the problems peculiar to this medium. Later, work branches out into the making of various objects, the designs based on classic units of increasing difficulty. Study is given to the fitness of the design for the space it is to decorate and the position it is to occupy.



Wood Carving in Oak.



Wood Carving in Oak.

DEPARTMENT OF DRAWING AND DESIGN.

FIRST YEAR.

1. Elementary drawing 1. Ten weeks. Study of solids in pencil outline, including form study and principles of perspective.
2. Elementary mechanical drawing. Ten weeks. Use of instruments, lettering, simple projections and working drawings. Required, 1.
3. Elementary drawing 2. Twenty weeks. Study of groups in light and shade, pencil and water color, interior and exterior, plant forms and simple composition. Required, 2.

SECOND YEAR.

4. Advanced drawing 1. Twenty weeks. Charcoal drawing from still life and cast composition and design. Block prints and stencil work. Required, 2, history of art.
5. Advanced drawing 2. Twenty weeks. Studies from solids and plant forms in charcoal and water color. Problems in design. Required, 4, history of art.

THIRD YEAR.

6. Elementary design. Twenty weeks. Principles of design, sketches of plant form and conventionalization. Designing and making of objects in cardboard, etc., as book covers, tooled leather, etc. Required, 2, 4, history of art.
7. Advanced design. Twenty weeks. Theory of color. Use and application of color to produce harmonious combinations. Wall-paper design, posters. Required, 6, history of art.
8. Pictorial drawings. Twenty weeks. Landscape and flower study in charcoal and water color. Required, 5.
9. Life drawing. Twenty weeks. Study from casts and life models. Sketching in charcoal and pencil. Required, 8.

SPECIAL.

10. Teachers' method class. Twenty weeks. Study of methods of teaching drawing in the kindergarten and eight grades. Required, 4.
11. History of art. Lectures and notes during the second and third years.

DEPARTMENT OF MECHANICAL DRAWING.

FIRST YEAR.

Drawing and design 1.

Drawing and design 2.

1. Advanced mechanical drawing. Twenty weeks. Orthographic projections, sections, intersections and development of surfaces, working drawings.

SECOND YEAR.

2. Shades and shadows. Twenty weeks. Isometric, oblique and cabinet projection and plan and elevation in shade and shadow, and application to working drawings.

3. Perspective. Twenty weeks. Principles of mechanical perspective and their application to practical problems.

THIRD YEAR.

4. Architectural drawing. Forty weeks. Comprises a study of the dwelling house, designing and drawing the complete plans and elevations, to give the pupil a knowledge of the house in which he will live. Lectures upon furnishing and decoration are given weekly. Required, drawing and design 2, mechanical drawing 3.

FOURTH YEAR.

5. Machine drawing. Forty weeks. Drafting of machine details, belting, cams, gearing, and machines belonging to the manual-training department. Outfitting of manual-training room. Required, drawing and design 2, mechanical drawing 1.

Course in Domestic Art.

The regular Normal course in domestic art is an eighty-weeks course, and includes the following work:

FIRST TWENTY WEEKS.

1. Principles of sewing and simple stitches, running, basting, overcasting, gathering, gauging, shirring, hemming, overhanding, study of bias, skirt without draft, French seam, fell seam, buttonholes, loops, eyelets, blanket stitch, sewing on buttons, plackets, tucking, putting on of bands, darning, patching, seaming and hemming of flannel, hemstitching, drawn work, simple embroidery, knotting of fringe, binding of skirts, slip hemming. The making of articles to illustrate use of stitches learned.

2. Textiles.

Study of production and manufacture of cotton, wool, silk, flax and other fibers.

3. Free-hand drawing, ten weeks.

Mechanical drawing, ten weeks.

SECOND TWENTY WEEKS.

1. Simple drafting of skirt, waist, sleeve.

Making of drawers, corset cover, gowns, underskirt, and shirt-waist suit. The material for the latter to be of a washable material.

2. House decoration and home furnishing.

3. Design and theory of color.

THIRD TWENTY WEEKS.

1. Advanced system of drafting.

Making of wool skirt.

Making of waist.

Making of simple jacket.

2. Charcoal drawing.

FOURTH TWENTY WEEKS.

1. Advanced work in dressmaking.

2. Art needlework.

3. Methods; planning of courses of study to be used in public schools. Practice teaching.

4. Costume design.



Dressmaking Room.



Drafting by Second-year Students.



Fitting in Dressmaking Department.

GRADE SEWING, BASKETRY AND CARDBOARD
CONSTRUCTION.

In addition to the eighty weeks' work given above, a course of twenty weeks is given in grade sewing and basketry.

In the grade sewing, models are made that may be used from the first grade up to the high school.



Shirt-waist Suit made by First-year Student.

The basketry includes the making of baskets of reed, raffia, splints, hemp, pine needles, and native materials, such as buffalo grass, cattail rushes, willow, etc.

— Indian baskets, both coiled and sewed.

Course for Home Makers.

The purpose of this course is to furnish training and instruction in the problems of home life without the professional work required in the Normal course.

It embraces work in both domestic science and art, being especially planned for those desiring practical knowledge in drafting, sewing, cooking, serving, laundering, and caring for the sick in the home, without the study necessary for the teaching of the subjects. The work is as follows:

<i>Subject.</i>	<i>Hours per week.</i>
Sewing and drafting	15
Food composition and dietetics.....	2
Cookery.....	10
Serving (five weeks).....	2
Laundering.....	2
Home nursing (five weeks).....	2

In sewing and drafting the following are considered:

Simple draft of skirt, waist, sleeve.

1. Making of skirt of washable material.
2. Making of shirt waist of washable material.
3. Making of skirt of woolen material.
4. Making of waist of woolen material.
5. Making of unlined jacket.

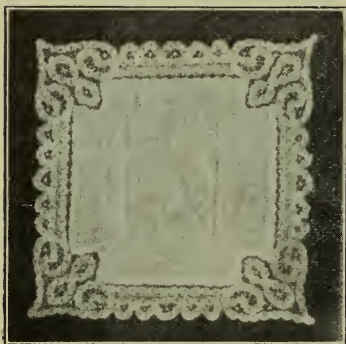
Lectures on material used, choice of materials, cost of clothing, costume design.

In cookery the following are considered:

Green vegetables.	Eggs.	Gelatin.
Roots and tubers.	Milk.	Bread.
Cereals.	Cheese.	Cakes.
Fats and oils.	Meat.	



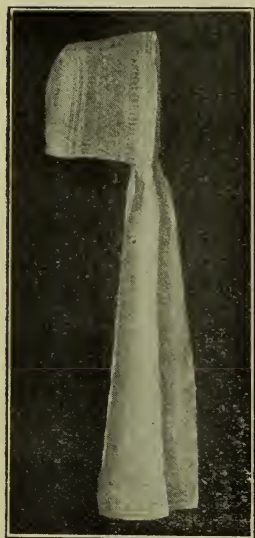
Costumes Designed and Made by Second-year Students.



Work of First-year Student.



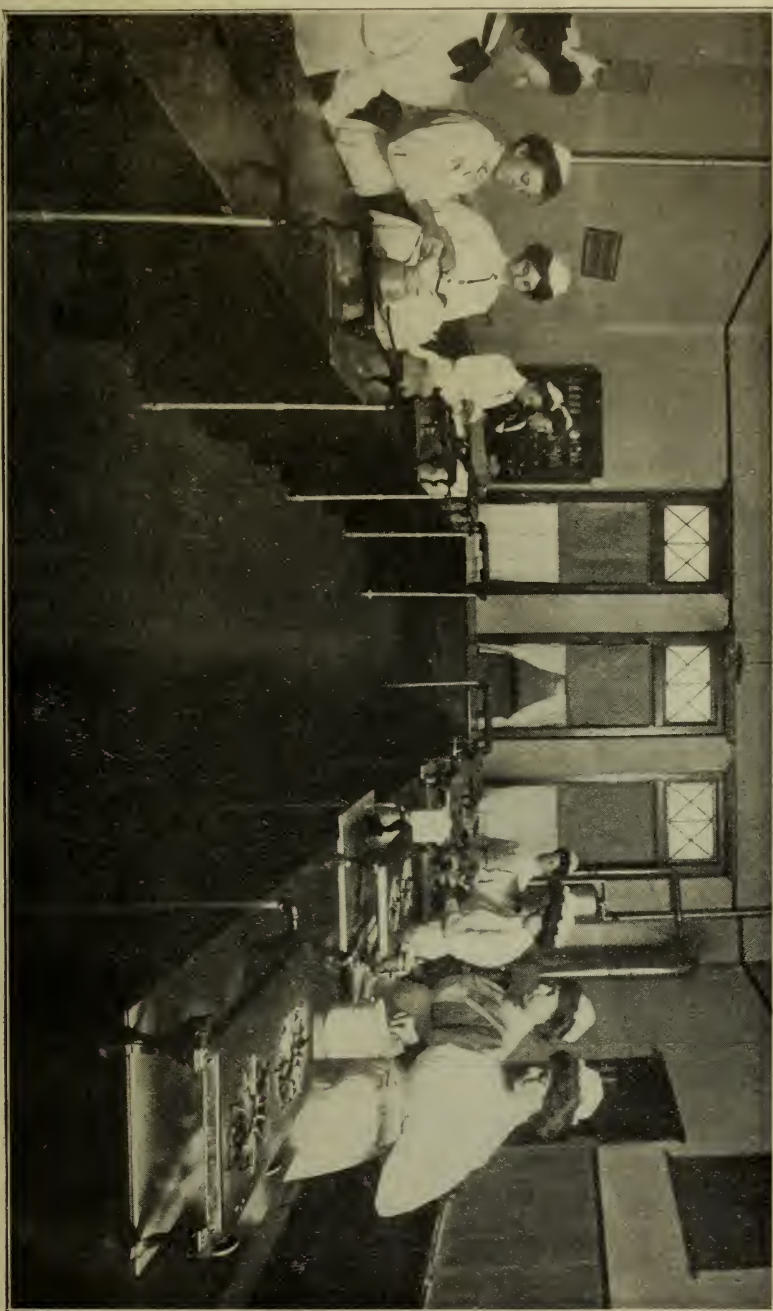
Work of First-year Student.



Work of Second-year Student.



Work of First-year Student.



Domestic Science Department. Kitchen Laboratory.

Course in Domestic Science.

In this age of specialization and practical application of knowledge there is a demand for special and distinctive training for women in education. This requirement is being met by introducing into educational systems courses of study pertaining to home life. The purpose of a course in domestic science is, (1) to dignify and make attractive the workings of the home; (2) to fit young women practically for home-keepers; (3) to furnish scientific and esthetic training. The Normal domestic science course consists of instruction pertaining to all phases of the home, correlated with such subjects as will elucidate the problems of the home and furnish professional training for teaching.

The outline for the course is as follows:

FIRST YEAR.

<i>Subject.</i>	I.	<i>Hours per week.</i>
Food experiments and cookery.....		6
Study of food composition and dietetics.....		2
Waitress lessons.....		2
Required academic study, physiology.....		2

II.

Food experiments and cookery.....	6
Study of food composition and dietetics.....	2
Laundrying.....	2
Required academic study, elementary chemistry.....	2

SECOND YEAR.

III.

Cooking and serving of meals, marketing, canning and pre-serving.	6
Domestic sanitation (10 weeks).....	2
Applied bacteriology (10 weeks).....	2
Demonstrations of cooking..	2
Required academic study, applied chemistry.....	2

IV.

Invalid cookery	2
Lectures on invalid diets.....	2
Home nursing (10 weeks).....	2
Household management (10 weeks).....	2
Domestic architecture.....	2
Practice teaching.....	2
Required academic studies, psychology and history of education.....	2

DOMESTIC SCIENCE I.

By means of lectures, food experiments and cooking a systematic study of foods, based upon the classification of the food principles, is followed. Special attention is given to food composition and dietetics. The following foods are prepared:

Green vegetables.	Fats and oils.	Meats.
Tubers and roots.	Eggs.	Gelatin.
Cereals.	Milk.	Fruits.
Sugars.	Cheese.	Beverages.

The waitress course embraces the following lessons:

- Care of dining room.
- Care of silver and cutlery.
- Care of lamps.
- Serving :
 - Breakfast.
 - Luncheon.
 - Dinner.

- Preparation of sandwiches.
- Care of bedroom.
- Chafing-dish cookery.



Dining Room of the Domestic Science Department.

DOMESTIC SCIENCE II.

The materials used in—

Muffins.

Pastry.

Poultry.

Cakes.

Salads.

Fish.

Breads.

Desserts and their preparation furnish subject matter for experiments and cookery.

The work in dietaries embraces the following subjects:

Fuel values.

Dietary standards.

Nutrient ratio.

Making of menus.

Instruction is given in scientific principles and practical work of laundering. In the well-equipped room devoted to this subject lessons are given in soap making, removing stains, methods of washing and ironing various garments and fabrics.



Products of Domestic Science Department.

DOMESTIC SCIENCE III.

Methods of serving, making of menus and cooking of various foods given in the first year's work are all combined in the cooking and serving of meals, special attention being given to cost and purchase of foods. The theory and practice of food preservation is also given.

The study of bacteriology embraces the following subjects:

Sterilization.

Air, water, ice and milk.

Disinfectants.

Sand filtration.

Antiseptics.

Domestic sanitation consists of the following subjects:

House location.

Heating and lighting appliances.

Water supply.

Ventilation.

Removal of waste.

Each student is required to give demonstrations of cookery before the class and such visitors as may be present.

DOMESTIC SCIENCE IV.

Invalid cookery consists of the study and preparation of special diets for invalids. The care and feeding of infants is included in this course. Instruction in home nursing embraces the following topics for lectures and practical work :

Sick room.

Baths.

Furnishings.

Method of inducing sleep.

Heating,

Administering medicine.

Ventilating.

Bandaging.

Sick bed.

Emergencies.

Household management treats of—

Division of family income.

Organization and division of labor.

Keeping of household accounts.

Various economic problems of the home.

Domestic architecture embraces study of—

Situation and site of the house.

Materials for building.

Practical and artistic requirements of a home.

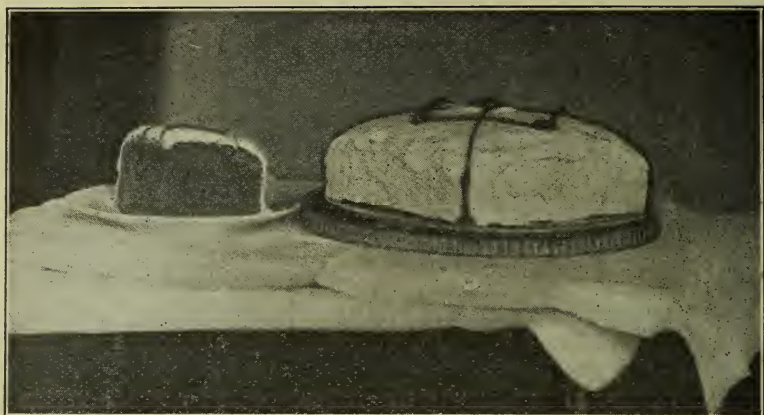
Drawing of house plans.

Furnishing and decorating of a home.

Teaching of domestic science under the direction of a critic teacher gives professional training in the subject.



Canned Fruits and Jellies, Domestic Science.



Chocolate Cake with Allegretti Frosting.

ATHLETICS.

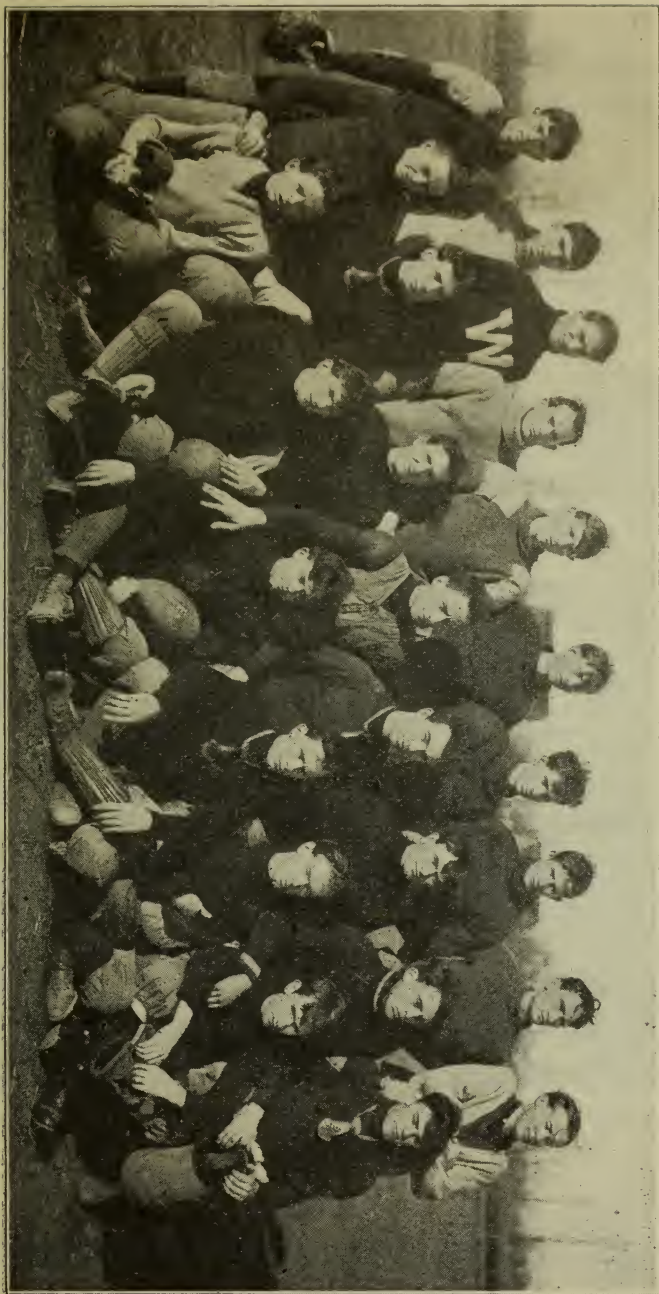
The athletic interests of the Normal are managed by a joint committee representing the Faculty and the officers of the Students' Athletic Association. This method of supervision creates confidence in its affairs. A new athletic field, large and well graded, furnishes ample opportunity for practice of the usual outdoor sports. A sixteen-foot cinder track has been recently completed. The various teams are trained under the supervision of the director of physical education. This training is intended to give prospective teachers systematic instruction in the various lines of physical education, looking toward the supervision of such work in schools.

The new gymnasium is well equipped for the different courses generally offered in physical education, and furnishes the usual facilities without expense to the student.

Each student who desires to join the association contributes one dollar per year for its support, and is thereby entitled to a season ticket to all the contest games.

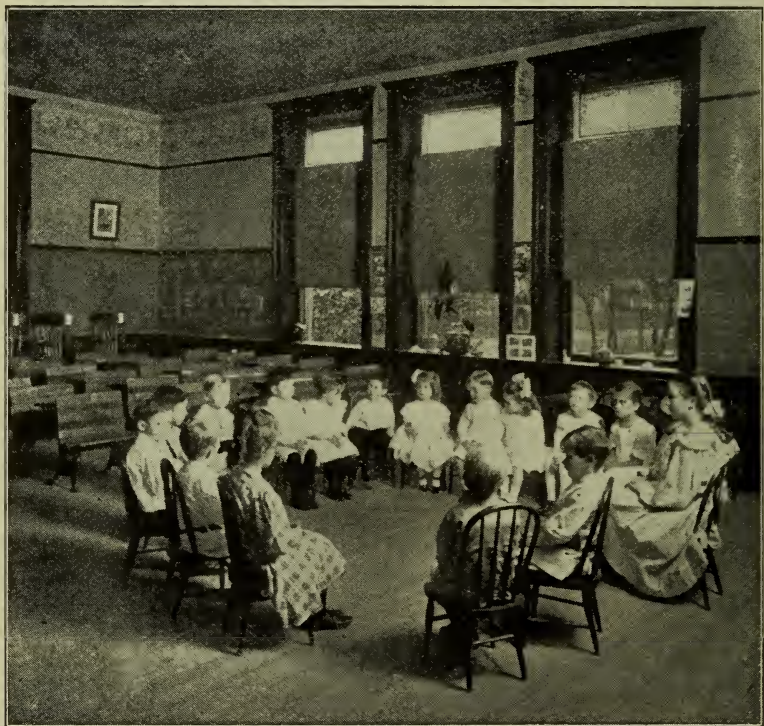
The affairs of the association are in a flourishing condition, and its work contributes much to the formation of a loyal school spirit, besides affording good, healthy exercise and entertainment for our student body.

Football Squad of 1909,



PRIMARY METHODS AND KINDERGARTEN DEPARTMENT.

RECENT LEGISLATION.—“Any person who shall complete the course of training for kindergarten teacher at the Kansas State Manual Training Normal School shall be entitled to teach in the kindergarten schools of this state without examination.”



Primary Model School.

DEPARTMENT OF COMMERCE

PRESIDENT'S OFFICE

This department has been organized in answer to a steadily increasing demand. Its object is twofold: *First*, to give students taking the regular normal course an opportunity to prepare for teaching the commercial branches, in which field of work there are exceptional openings for competent instructors, the call being largely for normal-school graduates who have specialized in these subjects. *Second*, to give special students an opportunity to fit themselves for commercial positions.

THE EQUIPMENT.

The equipment of the department is excellent, and students not only have the opportunity of gaining a thorough knowledge of the subjects taught in the best business schools, but also have the benefit of high-grade instruction in other subjects which are essential, such as English grammar, composition and geography, which subjects do not usually receive sufficient consideration by those who are taking commercial courses.

COMMERCIAL COURSES.

BUSINESS COURSE.

Bookkeeping. Double and single entry.

Business papers, tests and practice in the simpler forms of bookkeeping, etc.

Advanced bookkeeping. Sets of books illustrating retail, wholesale, commission and brokerage, manufacturing and banking accounts.

Business practice and office methods.

COMMERCIAL ARITHMETIC.

Drills in rapid calculations, fractions, denominate numbers, percentage, discounts, profit and loss, commission and brokerage, interest, insurance, banking, exchange, etc.

PENMANSHIP.

Drills in movement and form, and exercises in plain business writing. Daily practice.

SPELLING, COMMERCIAL LAW, ENGLISH.

Every student in our business and shorthand courses is required to take a thorough course in spelling, English grammar, rhetoric and English literature.

STENOGRAPHY.

SHORTHAND.

The course of study is carefully arranged. Particular attention is given to theory, every student's work being subjected daily to critical examination. Simple dictation matter follows theory in connection with the study of word-signs, phrasing, etc. Speed work and practice in all business and legal forms follow.



STATE MANUAL TRAINING NORMAL SCHOOL.

PITTSBURG, KANSAS.

MIDWINTER TERM

Opens Monday, January 31, 1910.

Spring term opens Monday, April 4, 1910.

Summer term opens Thursday, June 9, and closes Friday,
August 5, 1910.

Tuition Free to Kansas Students.

This institution issues:

One-year State Certificate.

Three-year State Certificate.

Life Certificate.

Life Certificate to Teach Kindergarten.

Courses:

1. Regular Normal Work.
2. Domestic Science.
3. Domestic Art.
4. Drawing—Free-hand, Mechanical, Architectural.
5. Manual Training—

{	Industrial Manual Training.
	Art Manual Training.
6. Kindergarten.
7. Commerce.

Athletics.—We have a splendid gymnasium; also ample athletic and tennis grounds.

The school is having a phenomenal growth. The enrollment this year, up to the present time, is 609. It will probably reach 700 to 800 before the close of the year.

Write for catalogue. Address,

STATE MANUAL TRAINING NORMAL SCHOOL,
PITTSBURG, KANSAS.